

Notice of Allowability

Application No.

10/071,799

Examiner

Juanita D. Stephens

Applicant(s)

MIHARA ET AL.

Art Unit

2853

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Amendment filed 5/11/04.
2. ☒ The allowed claim(s) is/are 19,20 and 22-30.
3. ☒ The drawings filed on 11 February 2002 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 09/128,538.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

DETAILED ACTION

Claim 21 canceled without prejudice or disclaimer in Amendment filed 5/11/04.

Allowable Subject Matter

1. Claims 19-20, and 22-30 are allowed.
2. The following is a statement of reasons for the indication of allowable subject matter:

The combination of said movable member fixed to said substrate and formed from a material comprising any one of silicon nitride, diamond, amorphous carbon hydride, silicon carbide, and silicon oxide and wherein said movable member is provided with a portion integrated with said substrate and fixed on said substrate by laminating said material from which said movable member is formed, a curved portion curving with respect to said substrate, and a movable portion separated from said substrate at a tip of said curved portion, recited in claims 25 and 28. This invention solves the problem of enhancing physical problem such as stress, rigidity, Young's modulus and/or chemical properties.

The combination of a cantilever type movable member being fixed to said substrate and being formed by a silicon nitride multi-layered film with the composition thereof being changed or impurities being added thereto, recited in claim 27. This invention solves the problem of enhancing physical problem such as stress, rigidity, Young's modulus and/or chemical properties.

The combination of a movable members supported by a pedestal portion formed on said substrate, wherein each of said movable members is formed by laminating a

material on said substrate and delaminating the material from said substrate, a thermal expansion coefficient of a portion of the laminated material facing said substrate being higher than that of another portion of the laminated material, recited in claim 30. This invention solves the problem of obviating the need to position the movable member in the substrate, thus permitting more precise formation of the interiors of the liquid flow paths and also permits controlling changes caused by temperatures in the nozzle.

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The prior art of Yoshihira et al. (US 6,074,543) discloses said movable member fixed to said substrate and formed from a material comprising any one of silicon nitride, **but does not disclose** wherein said movable member is provided with a portion integrated with said substrate and fixed on said substrate by laminating said material from which said movable member is formed, a curved portion curving with respect to said substrate, and a movable portion separated from said substrate at a tip of said curved portion.

The prior art of Hiroki et al. (US 6,485,132 B1) discloses a cantilever type movable member being fixed to said substrate and being formed by a silicon nitride multi-layered film with the composition thereof being changed or impurities being added thereto, **however Hiroki et al. cannot be used as prior art under 35 U.S.C. 102 common assignee or inventor because Hiroki et al. was not filed before the priority date of the application.**

The prior art of Ishinaga et al. (US 6,095,640) discloses a cantilever type movable member being fixed to said substrate and being formed by a silicon nitride multi-layered film with the composition thereof being changed or impurities being added thereto, **however Ishinaga et al. cannot be used as prior art under 35 U.S.C. 102 common assignee or inventor because Ishinaga et al. was not filed before the priority date of the application.**

Contact Information

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juanita D. Stephens whose telephone number is (571) 272-2153. The examiner can normally be reached on Flex.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.



September 10, 2004

Juanita D. Stephens
Primary Examiner
Art Unit 2853